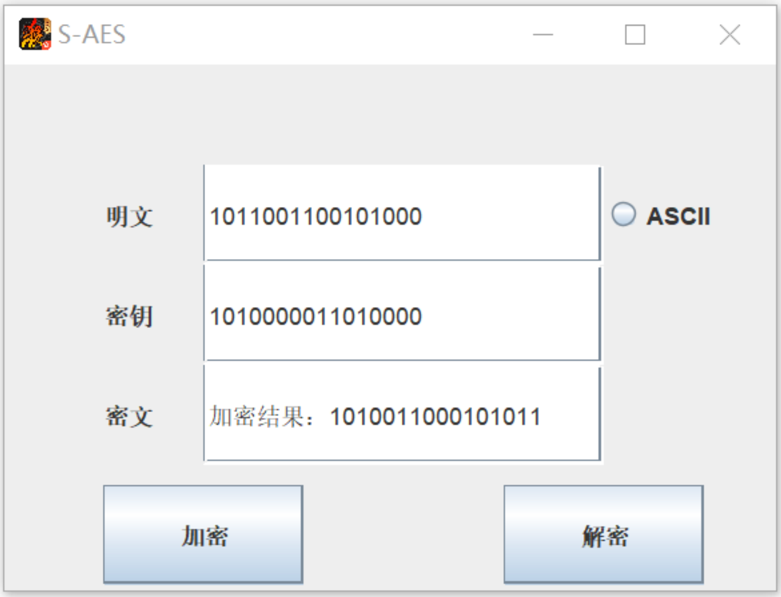
1.基本测试



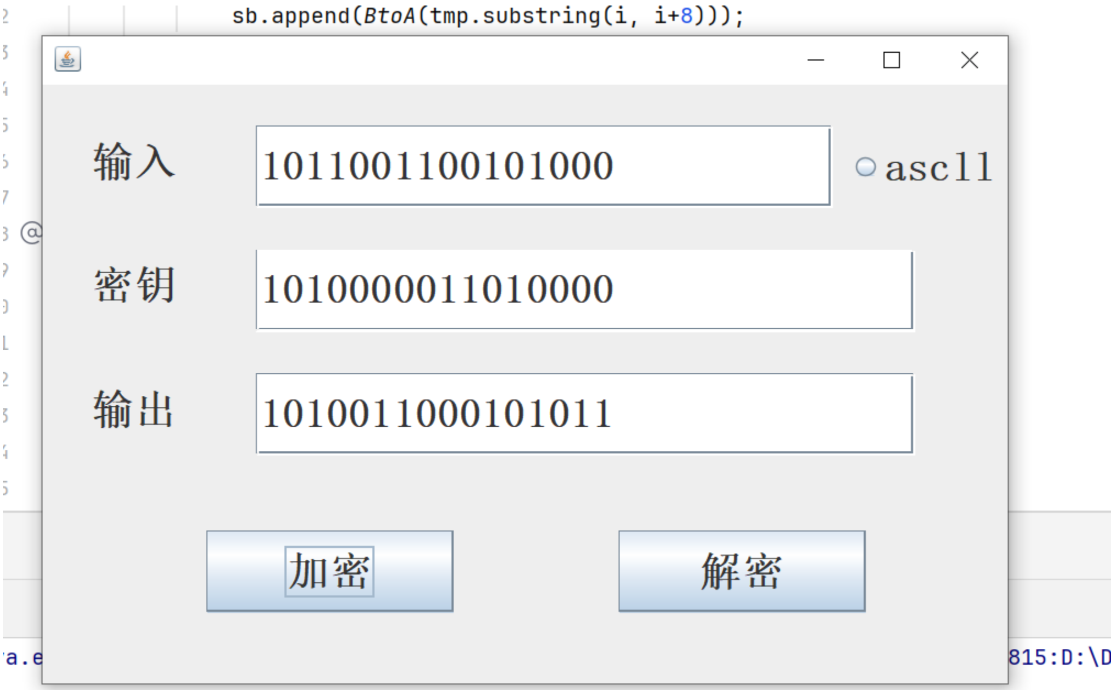
明文 1011001100101000 ○ ASCII

密钥 1010000011010000

密文 加密结果：1010011000101011

2.交叉测试

同学的结果



```
sb.append(BtoA(tmp.substring(i, i+8)));
```

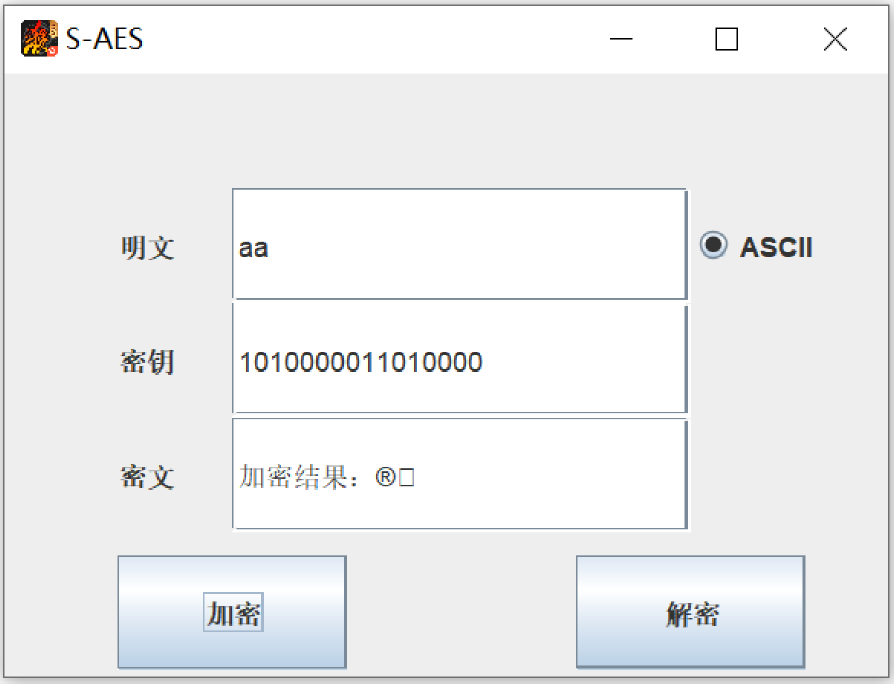
输入 1011001100101000 ○ ascll

密钥 1010000011010000

输出 1010011000101011

3.ASCII 输入

点击按钮可以切换明文输入模式



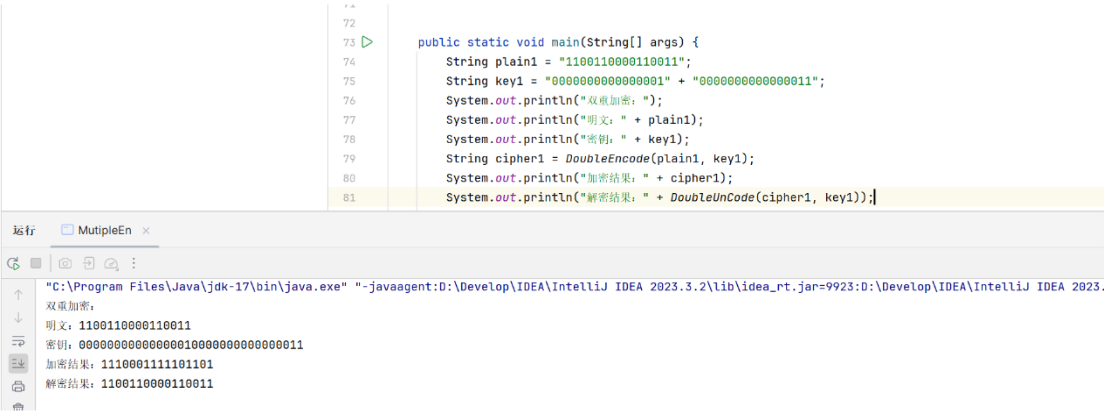
明文 aa ● ASCII

密钥 1010000011010000

密文 加密结果：®□

4.多重加密

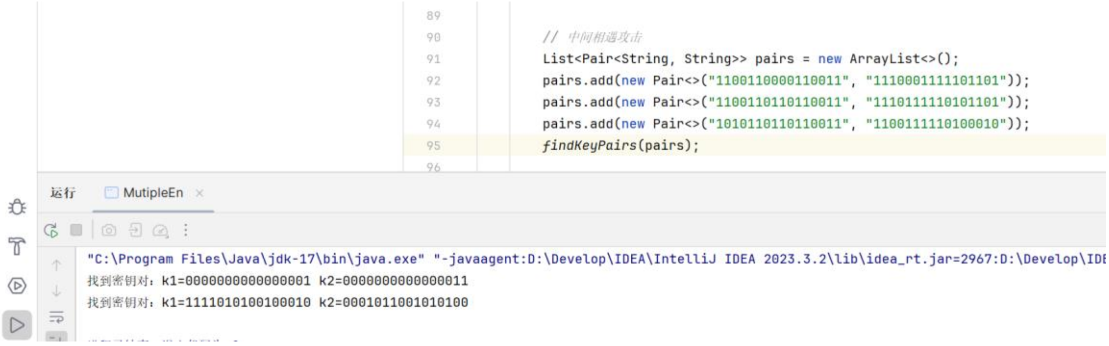
4.1 双重加解密



```
    public static void main(String[] args) {
        String plain1 = "1100110000110011";
        String key1 = "0000000000000001" + "0000000000000011";
        System.out.println("双重加密：");
        System.out.println("明文：" + plain1);
        System.out.println("密钥：" + key1);
        String cipher1 = DoubleEncode(plain1, key1);
        System.out.println("加密结果：" + cipher1);
        System.out.println("解密结果：" + DoubleUnCode(cipher1, key1));
```

```
"C:\Program Files\Java\jdk-17\bin\java.exe" "-javaagent:D:\Develop\IDEA\IntelliJ IDEA 2023.3.2\lib\idea_rt.jar=9923:D:\Develop\IDEA\IntelliJ IDEA 2023.
双重加密：
明文：1100110000110011
密钥：00000000000000010000000000000011
加密结果：1110001111101101
解密结果：1100110000110011
```

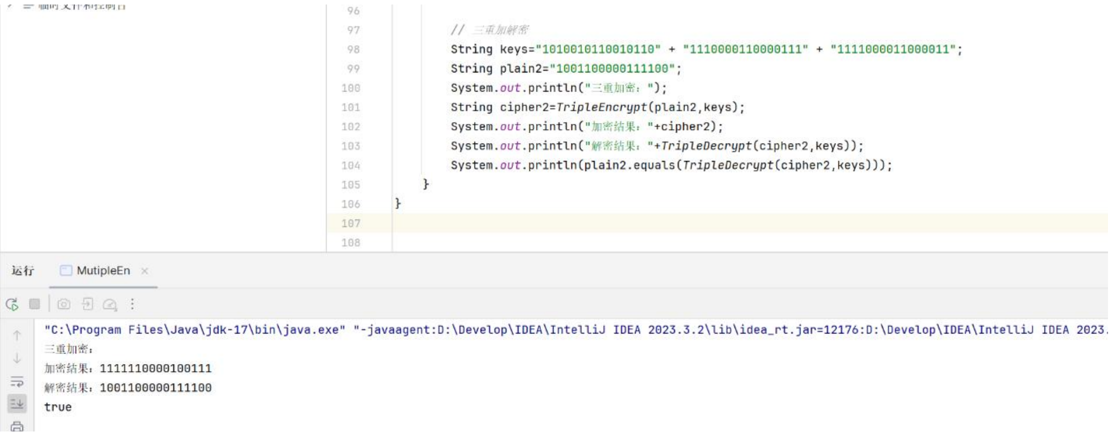
4.2 中间相遇攻击



```
    // 中间相遇攻击
    List<Pair<String, String>> pairs = new ArrayList<>();
    pairs.add(new Pair<>("1100110000110011", "1110001111101101"));
    pairs.add(new Pair<>("1100110110110011", "1110111110101101"));
    pairs.add(new Pair<>("1010110110110011", "1100111110100010"));
    findKeyPairs(pairs);
```

```
"C:\Program Files\Java\jdk-17\bin\java.exe" "-javaagent:D:\Develop\IDEA\IntelliJ IDEA 2023.3.2\lib\idea_rt.jar=2967:D:\Develop\IDE
找到密钥对：k1=0000000000000001 k2=0000000000000011
找到密钥对：k1=1111010100100010 k2=0001011001010100
```

4.3 三重加解密

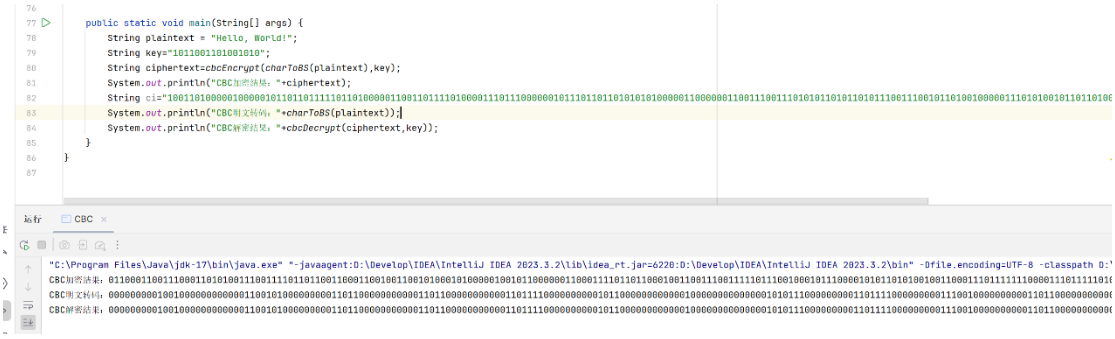


```
        // 三重加解密
        String keys="1010010110010110" + "1110000110000111" + "1111000011000011";
        String plain2="1001100000111100";
        System.out.println("三重加密：");
        String cipher2=TripleEncrypt(plain2,keys);
        System.out.println("加密结果："+cipher2);
        System.out.println("解密结果："+TripleDecrypt(cipher2,keys));
        System.out.println(plain2.equals(TripleDecrypt(cipher2,keys)));
    }
}
```

```
"C:\Program Files\Java\jdk-17\bin\java.exe" "-javaagent:D:\Develop\IDEA\IntelliJ IDEA 2023.3.2\lib\idea_rt.jar=12176:D:\Develop\IDEA\IntelliJ IDEA 2023.
三重加密：
加密结果：1111110000100111
解密结果：1001100000111100
true
```

5.工作模式

CBC 加解密



```
    public static void main(String[] args) {
        String plaintext = "Hello, World!";
        String key="1011001101001010";
        String ciphertext=cbcEncrypt(charToBS(plaintext),key);
        System.out.println("CBC加密结果："+ciphertext);
        String ci="10011010000010000010110110111110110100000110011011110100001110111000000101110110110101010100000110000001100111001110101011010110101110011100101101001000001110101001011011010
        System.out.println("CBC明文转码："+charToBS(plaintext));
        System.out.println("CBC解密结果："+cbcDecrypt(ciphertext,key));
    }
}
```

```
"C:\Program Files\Java\jdk-17\bin\java.exe" "-javaagent:D:\Develop\IDEA\IntelliJ IDEA 2023.3.2\lib\idea_rt.jar=6220:D:\Develop\IDEA\IntelliJ IDEA 2023.3.2\bin" -Dfile.encoding=UTF-8 -classpath D:\
CBC加密结果：0110001100111000110101001110011110110110011000110010011001010001010000010010110000000110001111011011000100110011100111110111001000101110000101011010100100110001110111111100001110111110101
CBC明文转码：000000000100100000000000001100101000000000001101100000000000011011000000000000110111100000000000010110000000000000100000000000000001010111000000000001101111000000000001110010000000000001101100000000000
CBC解密结果：000000000100100000000000001100101000000000001101100000000000011011000000000000110111100000000000010110000000000000100000000000000001010111000000000001101111000000000001110010000000000001101100000000000
```